

ABSTRACT

An automatic electro-mechanical microwave tuner to be used in transistor load pull and noise testing, comprises a horizontal slotted airline with a test and an idle port and two horizontally remotely movable metal-dielectric combination probes, used to generate very high reflection factors at the tuner test port over a wide frequency range. The probes are square metallic slugs as wide as the slot of the airline and of various lengths and include encapsulated dielectric cylindrical inserts of various diameters, which slide on the central conductor of the slotted airline; the mutual horizontal distance between the probes determines the amplitude of the reflection factor and their common distance from the tuner test port determines its phase. A tuner calibration method consists of an algorithm, which measures S-parameters of the tuner two-port as a function of the probe positions and saves those in calibration data files for later use.